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Journal of DENTAL MEDICINE

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OBJECTIVES OF THE AMERICAN ACADEMY OF DENTAL MEDICINE

(Quoted from the Constitution)

"To promote the study and dissemination of knowledge of the cause, prevention and control of diseases of the teeth, their supporting structures and adnexa and related subjects; and to foster and promote a better scientific understanding between the fields of dentistry and medicine."

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RETIRING PRESIDENT'S ADDRESS*

SIDNEY SORRIN, *New York, N. Y.*

The members and officers of the American Academy of Dental Medicine have been most active in pursuing our stated objectives: "To promote the study and dissemination of knowledge of the cause, prevention and control of diseases of the teeth, their supporting structures and adnexa and related subjects; and to foster and promote a better scientific understanding between the fields of dentistry and medicine."

These objectives have necessitated many meetings and considerable activity on the part of all the officers and the various committees. The office of your president has been busy this year with communications, section meetings and committee work.

The various committees were appointed by your president shortly after his election. The committees have been most active. I should like at this time to express my thanks to the chairmen and the committee members for their fine cooperation.

The Board of Trustees has met twice this year. Two full days were required to complete the business of the governing body of the Academy. The Board discussed matters relating to constitution, expansion with decentralization, journal, programs, endowment fund, research, annual budget and financial set-up. Under the chairmanship of Dr. Blass, they did heroic work. In behalf of the Academy, I extend sincere thanks for their untiring efforts.

During the present administration, it was decided to have a Fall meeting in conjunction with the Greater New York Meeting in December. That session is now history. Judging by the comments heard throughout the country, the Academy can feel proud of its accomplishment. Dr. Miller's committee, in which he was associated with Drs. Burman and Roth, made this occasion a most successful event. The report in our current journal covered this meeting in great detail.

The journal itself, under the able editorship of Dr. Allan N. Arvins, has made its influence felt all over the world. Letters of commendation have come to this office and to the office of the editor. The subscriptions from others than members have increased notably. The editorial board and the board of publications can be proud of their achievements.

One of the objectives of this administration was the establishment of sections during the 1947-1948 regime. With this in mind, our past-president Dr. Samuel Charles Miller, was asked to head a committee for the establishment of these sections.

At the present time four sections, Massachusetts, Connecticut, New Jersey, and Iowa have applied for charters and are awaiting official sanction from this meeting. Dr. Miller, your president, and president-elect Dr. Blass have journeyed to a number of the organization meetings of these chapters to offer assistance. Several other state units are now in the process of organization. To Dr. Miller, I express our sincere appreciation for his great efforts in the development of this program.

Your officers this year have felt that there was a need for decentralization. With this in mind the chairmen of the committees were carefully selected to include representatives from all parts of the country. The Board of Trustees also included physicians, who have been most helpful in broadening our scope.

The membership of our organization has increased from seventy-five members to approximately two hundred and fifty within a year. We can well be proud of the membership committee, which is required to inspect each application to see whether the candidate qualifies for consideration. In time, each state will invite its own members and pass on their qualifications. To Dr. Charles Barrett and his

* Read before the American Academy of Dental Medicine, June 12, 1948.

committee, may I express the deep gratitude of the Academy. Dr. Barrett allots a certain part of each day for Academy activties. We are in his debt.

The award and endowment fund has been given impetus by donations which we trust will grow to proportions that will enable us materially to advance our objectives: The committee, under the guidance of Dr. Julius Horn, has worked untiringly.

This year has been distinguished by the conscientious activity of our membership. On behalf of the Academy, I offer my personal thanks to the following officers of our organization.

To President-Elect Dr. J. Lewis Blass, who has been most active as chairman of the Board of Trustees and the program committee.

To our Secretary Dr. William Greenhut, who has attended to the details of this office in a manner which cannot be surpassed for ability and enthusiasm.

To our Treasurer, Dr. George A. Bruns, go our thanks for the manner in which he has guarded our funds. (Try to get some money without authorization and find out)..He has also placed our bookkeeping records on a sound financial basis and reorganized our fiscal setup. Good work, George.

In the case of our editor, Dr. Allan N. Arvins, the Journal speaks for itself. I need say no more of this excellent contribution to our successful year.

One of our members who also deserves special commendation is our hard working business manager, Dr. Lou Burman, who is behind the scenes assisting all committees, your president, and your editor. His efforts have been most appreciated.

The work of the president has been lightened by the excellent cooperation of the members, the officers and chairmen of committees. I offer the following suggestions for future development:

1) Enlargement of the endowment fund. It is suggested that a request for endowment contributions be included in the bill for dues. This is employed by many organizations with satisfying results.
2) Appointment of a committee of dentists and physicians to outline mutual problems for consideration by our organization.
3) Continued development of the state sections.
4) Preparation of a directory and constitution for distribution to our members.
5) Establishment of awards in every dental and medical school for proficiency in dental medicine.
6) Establishment of the meeting in conjunction with the Greater New York Meeting as a regular winter gathering.

This year has been a most pleasant one and I shall remember it always as one of the happiest periods in my life. It was a privilege to serve you and I trust that in the years to come we will continue to progress steadily towards the objectives which the founders had planned for the Academy.

Again my sincere thanks and appreciation.

745 Fifth Avenue

American Academy of Dental Medicine

The American Academy of Dental Medicine will hold its Annual Mid-Winter Meeting and Luncheon at the Hotel Pennsylvania, on Sunday, December 5th, 1948, at 12:30 P.M. Round Table discussions on dental-medical subjects will follow. All members and interested dentists and physicians are invited. Address to: Dr. Wm. M. Greenhut, National Secretary, 124 East 84th St., New York 28, N. Y.

A VOLUNTARY HEALTH INSURANCE PROGRAM FOR CHILDREN*

HARRY STRUSSER, D.D.S., M.S.P.H., *New York, N. Y.*

The application of the insurance principle in dentistry has been questioned because,

1—dental disease is found universally distributed in the population,

2—dental service is needed at regular intervals,

3—the initial cost to repair and replace the cumulative effects of neglect, and

4—the extent of the loss in the number of teeth increases with age and years of neglect.

Dentistry has been practised on a demand basis and our attention has been directed mainly to the treatment and little has been done for prevention and control. We must admit, however, that many attempts have been made to stimulate and establish public health programs for children, focus attention upon dental health education, regular and continued dental care, control loss of teeth and supporting tissues and provide incentives to promote research in the field of dental diseases.

Dentistry has also noted with keen interest and analyzed the social and economic trends, and to keep abreast of progress has recommended changes in administration and technical practices. Among these recommendations we find the application of group practice, the use of auxiliary personnel and voluntary health insurance. No plan has been attempted which makes complete dental care available, although we do find plans for *some* care, either for children or adults, or for both. Recommendations of the American Dental Association and the National Health Assembly stress *adequate dental treatment for children and services for the elimination of pain and infection for adults.*

In plans proposed here we attempt to apply *voluntary health insurance principles* of spreading the cost so as to render, at a very nominal sum, diagnostic, protective and corrective dental care to the children of a special age group. The principle of *group practice* and *organization* with *auxiliary* and *ancillary personnel* enables us to obtain the desired results. We shall also attempt to study and evaluate the scientific and administrative results as they are influenced by the insurance principle and group practice in dentistry.

Let us take an insured population of 100,000. If that population follows the general trend of the population as a whole we will find that 6% of the insured population comprises children below the age of 6. In New York City that is the case, however, in other parts of the country these conditions may vary and the plan can be readily adapted.

For convenience let us asume that we find 6% of the population, children, therefore, we would find 6,000 children with 1,000 children in each age group 0-1, 1-2, 2-3, 3-4, 4-5, 5-6. From a dental point of view, very little can be done for the groups 0-1 and 1-2 as teeth begin to erupt about the 5th to 8th month after birth and a full complement of deciduous teeth is found in the mouth when children reach 2½ or 3. We can, therefore, eliminate the first 2,000 children from our plans for the first year of operation, however, the service assumes responsibility for their future care.

Statistical analysis and data show that 47% of children 2 to 3 years of age need dental care; that 75 to 80% of the children age 3 to 4 need dental care, and that 90% of the children in age groups 4 to 5 and 5 to 6 need care. Applying these percentages to the child population below 6 years of age we conclude that 4,000 children should receive examination, roentgenographs, prophylaxis, topical application of sodium flouride, and

* Read before the American Academy of Dental Medicine, June 12, 1948.

3,000 children must be provided with initial operative service to include necessary fillings and extractions, space maintainers, etc.

If we define initial care as that care received by children during the first year of their dental experience, maintenance care for every year thereafter up to 6 years of age, and protective care as that care given every year above 6 years of age, we can outline the operation of clinic according to the following table.

OPERATION OF CLINIC

Insured Persons

First Year	Original Group 100,000		6,000 children (0-6)	I*	care
Second Year	Original Group 100,000		5,000 children	I.M	care
			1,000	P	
	additional **50,000 F		3,000 (0-6) F	I	care
Third Year	Original Group 100,000		4,000 children	I.M	care
			2,000	P	care
	50,000 F		2,500 (0-6) F	I.M	care
			500 (0-6) F	P	care
	additional **20,000 S		1,200 (0-6) S	I	care
Fourth Year	Original Group 100,000		3,000	M	care
			3,000	P	care
	50,000 F**				
	(0-6)		2,000	I.M	care
	(0-6) F		1,000	P	care
	20,000 S				
	(0-6) S*		1,000	I.M	care
	(0-6) S		200	P	care
	50,000 T				
	(0-6) T**		3,000	I	care
Fifth Year	Original Group 100,000		2,000	M	care
			4,000	P	care
	50,000 F		1,500	M	care
			1,500	P	care
	20,000 S				
	(0-6)		800	I.M	care
			400	P	care
	50,000 T				
	(0-6)		2,500	I.M	care
			500	P	care

* I—Initial Care M—Maintenance Care P—Protective Care
**F—First Additional Group S—Second Additional Group T—Third Additional Group

Clinic facilities provide about 14,000 hours of dental services and the number of children receiving care annually is controlled by the number of hours needed by the children for complete care. The service is planned on an appointment system and the clinic is kept reasonable in size so as not to take on a "large clinic look." The service will be supervised by a senior dentist and health education activities directed by a teacher and dental hygienist.

This plan has taken into consideration the Principles for Dental Health Programs enunciated by the American Dental Association, and adopted by the National Health Assembly.

1. *Research* Adequate provisions should be made for research which may lead to the prevention or control of dental diseases.

Research in the plan can also be directed to the field of administration. The establishment of standards for care, the application of improved methods for providing preventive and control services, the types of services that will provide the best results, the inclusion of the tested procedures provided by basic research and the effect on future planning, the effect on costs of providing services and the influences of economic and changing conditions—all of these can be included when the administrator understands and makes use of the tools and materials provided by this organization.

2. *Dental Health Education* Dental health education should be included in all basic educational and treatment programs for children and adults.

Under the heading of Dental Health Education, opportunities are provided for the dissemination of dental information by allied groups participating in the Voluntary Insurance Program and by direct and positive teaching by a competent health education worker and the dental hygienists when children report for treatment. Dental projects may be carried on by the staff which would not only interest the children but produce lasting effects on children and parents as well.

3. *Dental Care* (a) Dental care should be available to all regardless of income or geographic location as rapidly as resources will permit. (b) Programs developed for dental care should be based on the prevention and control of dental diseases. All available resources should first be used to provide adequate dental treatment for children and eliminate pain and infection for adults. (c) Dental health is the responsibility of the individual, the family and the community, in that order. When this responsibility however, is not assumed by the community, it should be assumed by the State and then by the Federal Government. The community in all cases should determine its methods for providing service.

The application of the group practice principle in a Voluntary Health Insurance program would result in supplying the best type of organization for the treatment of children. Members of the staff would be able to confer, study the needs of children and apply treatment best suited for the individuals. Space maintainers would be supplied and continued supervision would result in preventing many varieties of malocclusion, especially those due to early loss of teeth due to neglect. Specialists in the various branches of dentistry could also be made available if and when necessity demanded.

A complete schedule of operation based on experience shows that when dentists are paid salaries ranging from $6000 to $8000 a year and proportionate salaries for dental hygienists, health education teacher, assistants, technicians and office staff the cost of operation for the first year is 63 cents per capita insured. The schedule of costs for ensuing years is attached here.

It is also interesting to note, that if we gave the staff a 5% increase in salary the second year, the rate to the insured

persons would be less than 1 cent per week. Questions have been asked, "Is it necesary to start with 100,000 insured," and the answer is: it is not necessary to start with so large a group and the services can be modified to suit needs. In some communities it can be arranged so that the service may be given by the private practitioner on a per annum basis and the cost to the insured, while slightly higher than when the service is given in the clinic, is still within the range of the individual subscribers to the Voluntary Health Insurance Plan. Some advantages to a group practice unit, however, are lost to both staff and to the children served.

175 Fifth Avenue

Insured	*Cost of Operation*	*Active Treatment Cost Per child*	*Cost Per Capita Insured*
I Year			
100 000	$63,000.00	$15.75	63¢
II Year			
150 000	72,400.00	10.34	48.4¢
III Year			
170 000	81,950.00	8.82	48.2¢
IV Year			
220 000	101,350.00	8.45	46.0¢
V Year			
220 000	101,350.00	7.98	46.0¢
VI Year			
220 000	101,350.00	7.68	46.0¢

Comments at Annual Meeting of the AADM

The Second Annual Meeting of The American Academy of Dental Medicine convened at the Hotel Pennsylvania in New York on June 12 and 13, 1948.

Dr. Samuel Charles Miller, first president, was awarded Fellowship in the Academy at the luncheon on June 12.

Dr. Sidney Sorrin, retiring president, was honored with a plaque expressing the appreciation of the Academy for his fine administration.

Following the luncheon Dr. Louis B. Amyot of Schenectady, N. Y. presented his very excellent colored motion picture "Arctic Patrol."

The scientific session followed at which time the following papers were presented:

1. A Voluntary Health Insurance Program for Children by Harry Strusser, D.D.S., M.S.P.H.
2. Cine-Fluorography of the Tempero Mandibular Joint by Sidney E. Reisner, D.D.S.
3. Disturbances of the Salivary Glands by Herman J. Burman, M.D., and
4. Use of Drugs and their Effects on Tissue Repair by Maurice J. Oringer, D.D.S.

The comments heard at the conclusion of the addresses were highly complimentary and the Academy is indebted to the speakers for their contributions.

Honorary Membership in the Academy was conferred at the dinner meeting upon E. M. Bluestone, M.D., Director of Montefiore Hospital. He responded with a most interesting address which may be read on page 57 of this issue.

Following the dinner on Saturday, Dr. Philip Ament of Buffalo, N. Y. presented "Relaxation of Excitable Dental Patients with Hypnosis."

The program for Sunday June 13, offered some seventeen clinics covering all phases of dental medicine. These were well attended and well received.

The meeting adjourned with all of us looking forward to the Midwinter session which will be announced in the Journal.

A.N.A.

ON RECEIVING HONORARY MEMBERSHIP IN THE AMERICAN ACADEMY OF DENTAL MEDICINE*

E. M. BLUESTONE, M.D.**

I face my task this evening with the traditional diffidence of the modest speaker. The honor which you have conferred on me must have been based in part on the fact that, as a democratic hospital executive, I seldom insist on the first person singular in my administrative relationships. Yet you have compelled me to begin my acceptance with this very provocative pronoun. How shall I forgive this intrusion on my privacy? I cannot deny to you that I am beside myself tonight, with satisfaction that is more than skin deep, but it will be for the sake of the splendid men of your profession who stood alongside of me during almost three decades of hospital administration that I accept the honor on such terms. It will be good to recall this ceremony as the years close in on me and I shall always regard it as a symbol of the kind of friendship among men of science which makes life worth living.

E. M. BLUESTONE, M.D.

It is precisely around thoughts like these that I want to build my remarks as I write out these lines for the record. Friendliness is a happy gift in the life of any man though it does not always confer immortality on those who are blessed with it. Among men like ourselves it can be life-saving and life-sustaining. If I were to concede that the citation conferring honorary membership on me in the American Academy of Dental Medicine is even partly true, I would at once have to relate the effect to the cause and it is our friendship that comes uppermost to my mind as this cause. I have been amply rewarded by friendships during the course of my professional career and it is to them that I point with pride as I view their power for good in this world. This citation is a badge of friendship which I hope that I may continue to deserve. I can only regret that good men of our own profession of oral medicine and surgery, who stood by in earlier days at Montefiore Hospital and were taken from us in their youth, are not here to share this evening with me—men like Greenfield, Futterman, Pokress and Wilson. It is like a benediction only to recall their names.

I have been asked on various occasions what it is that draws me to your profession, as if there might be something eccentric about the phenomenon. How did it come about that my interest in it has been so vigorous, sustained and compelling? Why do some still regard it with polite surprise when they hear of the place which oral medicine and surgery has occupied in the hospitals with which I have been privileged to be associated? Reactions like these make me wonder at the man of science who is not

* Read before the American Academy of Dental Medicine, Dec. 12, 1948.

** Director, Montefiore Hospital.

at the same time philosopher enough to see and understand these things which to me are as fundamental as they are real.

The relationship between all of the specialties which make up the practice of medicine and surgery are indivisible and therefore inseparable. No man of science, with the human body as his precious charge, can afford to look icily or absent-mindedly thru one of his natural colleagues as if he were a transparency, and still hope to see, much less inherit, the world beyond. The doctor who has a blind spot for the dental contribution to human welfare is apt to stumble over his problem and do it scant justice. The practice of medicine is a cooperative undertaking and I venture the prophecy, on an occasion like this, that the new concept of group-medicine which is replacing the separatism of the general and the special in the medical practice of the last half century, will include oral medicine and surgery as a fit partner in a professional league of honor.

I know the obstacles, the barriers and the resistances, and have dwelt on them in various publications on the subject, but whatever the excuses may have been in former years for the cleavage between medicine in general and dentistry in particular, they no longer exist. The pages of history have turned to a new chapter in these relationships, a chapter in which no patient will be denied any opportunity whatsoever in his search for a cure, or for relief from discomfort. The intensity, duration, or prognosis of any illness may determine the extent, variety, and cost of the medical response, but none of them will alter basic necessities. Subjectively, the worst illnesses are, after all, those from which we do not die promptly. We had therefore better plan more carefully. Long-term illness in its major or minor manifestations, for example, will surely overtake those of us who do not die young. As the span of life increases and illness strikes more lastingly in the later years, we shall want to make people comfortable, as well as healthy in the ordinary sense, and you cannot achieve this goal without the oral physician and surgeon, particularly if you have overlooked the golden opportunity of youth to prevent the discomforts of age.

You all know the romantic chapter of dentistry in the history of Montefiore Hospital and I need not repeat it in detail here. It is as safely intrenched, as productive, and as harmonious a segment of our scientific activities as any other specialty, which it does indeed join indivisibly in making up an effective working unit. It pulls its weight with ease, with dignity, and with intellgence. Opportunity beckons at every turn, in good relationships, and in challenging clinical material; in the inspiring classroom and in the scientific laboratories. Our only regret arises at times from the fact that wholesome conditions of service to the sick like these are not more general in their acceptance. Dental men as a group are still relatively timid, fearful of the rebuff which was their lot only yesterday. But the entire status of scientific medicine is changing under the pressure of new inventions and discoveries, and dental men should watch for and take advantage of every opportunity to move ahead with the vanguard. I refer not only to hospital service which is opening up more invitingly to the oral specialist than ever, but also to such mundane matters as dental economics.

We shall doubtless have to start with preventive dentistry as a logical beginning and take advantage of each lesson that follows from its conscientious application. Group-insurance purchasing group-medicine on a voluntary basis—that great gift of social medicine to our generation—will point the way, since it will spread the cost of the service as no other way can do. What you cannot prevent you must cure. This is an axiom of medical life which is as true in dentistry as it is in any other activity of medicine or surgery. You will not successfully do one without the other and the way to begin is in preventive dentistry, used as a wedge in opening the gates of opportunity. It is certain that modern community organization cannot

tolerate a state of affairs in which professional service of this kind must be limited to those who can afford it on an individual-fee basis. We shall know that we have arrived at a reasonable period in medical history when the poor will share in the benefits of dental science to the same extent that they now share in the benefits of the other specialties. What can we do at this time to promote the claim of the oral physician and surgeon to recognition, for the benefit of all strata of the population, so that his services will not be the exclusive property of the upper economic levels of society? This is only one of the questions that we must answer if we are to survive as self-respecting men of science.

I return to the theme of this address and repeat that friendship, with all that it means and requires—its pleasures, its obligations and its advantages—must be shared to be real, used as a way of life to be productive and carried forward with missionary zeal to bring about a kind of service to the sick and to the well which Sir Thomas More in his Utopia, and other so-called Utopian idealists, have striven to bring about. We have proved this to be the way that brings results in our Hospital and we therefore recommend it to others.

It is in this spirit that I accept the honor which your organization has bestowed on me. Having enjoyed membership informally in the dental fraternity for many years, the experience cannot be new to me. I shall, however, prize it all the more for this manifestation of your agreement with much that I have stood for in my generation, while hoping that what we have done at Montefiore Hospital will be the rule rather than the exception henceforth. Friendship is a two or more way phenomenon. My thanks are therefore dual in nature—for the gift itself and for the givers, heaven-sent friends who from the beginning of time have made this world go round and made life worth living.

Dr. Sidney Sorrin receiving Past President's plaque from Dr. Samuel Charles Miller

USE OF DRUGS AND THEIR EFFECTS ON TISSUE REPAIR*

MAURICE J. ORINGER, D.D.S. *New York, N. Y.*

When should drugs be used? What drugs should be used, and how? How much can we expect from their use in the treatment of oral lesions and infections? What may be the effects of injudicious or indiscriminate misuse of drugs on the oral tissues? These questions constitute some of the most important problems of modern dentistry. The more complex the pharmacology and pharmaco-dynamics of the drugs involved, the more complex do these problems become.

A scientific approach to any problem requires that the problem be thoroughly conceived, a solution carefully planned, and the plan skillfully executed.

Such an approach is essential for the successful treatment of oral diseases, and the eradication of oral pathology. It entails:

(A) Thorough study of each case as an individual problem, to arrive at a correct diagnosis.

(B) Determination of our ultimate objective.

(C) Institution of a skillfully executed, scientifically sound course of treatment.

(A) Study of each case entails the use of all available diagnostic aids, such as the roentgenogram, pulp vitality test, transillumination, the use of bacteriological, pathological and other laboratory facilities wherever indicated, and a complete medical history of the patient. It also involves careful selection of the anesthetic of choice for each individual case, dependent upon the physical condition of the patient, as well as the nature and duration of the proposed surgical procedure.[1]

(B) Our objective is to eliminate all infection and resultant diseased structure; to eliminate degenerative tissue resulting from trauma; to avoid unnecessary loss of anatomical structure and contour; to stimulate healing, and restore the oral tissues to a normal state; to reconstruct the alveolar and gingival structures as far as possible, when their normal anatomical contour has been lost, so that adequate prosthetic restorations can be constructed for the patient.

(C) A prerequisite to institution of a skillfully executed sound course of treatment is thorough preliminary planning. The use of study models for comprehensive preoperative planning, particularly in cases that require oral reconstruction due to loss of normal anatomical contour, is often a valuable aid. The reduction of operating time, conservation of tissue and maximum effectiveness of the end result are ample compensation for time expended on planning.

Before any reconstructive treatment can be instituted, the oral tissues must be in a healthy state. Suitable pre and postoperative medication for the prevention, control, and eradication of infection plays a vital role in the ultimate success of our treatment. The advent of the "miracle drugs," such as the sulfonamides, antibiotics and products of blood fractation, has been of enromous help in the battle against infection. Unfortunately, the future effectiveness of many of these drugs is in jeopardy. There seems to have developed among many in the ranks of both the medical and dental professions, a tendency toward blind dependence upon these drugs, often to the degree of using them as substitutes for skill, instead of their proper use as valuable adjuncts to sound technique. This dependence has apparently become so complete as to often ignore the need for thorough diagnosis before treatment is instituted, without any attempt at predetermination of the threapeutic value of the drugs for the specific case under treatment.

A brief resume of the phenomenon of

* Read before the American Academy of Dental Medicine, June 12, 1948.

the mechanism of repair of tissue, at this point, may help us to properly evaluate the behaviour and action of many of the drugs commonly used in the treatment of oral diseases. It is an indisputable fact that the mechanism of repair of tissue is instituted by the blood, and that the various organs of the body contribute toward its efforts. When cellular tissue is injured and dies, as the result of functional wear and tear, trauma, or disease, the blood carries the materials necessary for the body to repair or replace the affected cells, to the structure involved. Where destruction of tissue cells results in rupture of even minute blood vessel walls, bleeding ensues. The vitamin K in the blood stimulates the formation of an adequate quantity of prothrombin in the normal blood stream. Heparin, produced by the liver, normally prevents the activation of the prothrombin by the calcium ions also present, from forming thrombin. When blood platelets are ruptured, however, cephalin, which has a specific affinity for heparin, is also released, and thus removes the check from the prothrombin, which then reacts with the calcium ions to become thrombin. This enzyme then unites with the fibrinogen of the blood to form fibrin, more commonly called the blood clot.[2]

With a normal uninterrupted blood supply carrying the necessary nourishment to the blood clot, the latter begins to form new tissue cells of a specialized nature, or becomes "organized." These new cells form accessary blood vessels, as well as connective and other tissues. This highly vascular new tissue, referred to as granulation tissue, progresses to replace damaged or destroyed soft tissue or bone structure, until complete healing is effected.

Should this delicate reparative process be impaired by injudicious use of chemical irritants that destroy cellular structure, not only is the balance and efficiency of this normal repair mechanism upset, and healing retarded, but often acute inflammatory reaction occurs, inviting infection. Infection present at the time of injury, will likewise disrupt the efficiency of this repair phenomenon, and must be eliminated.

Let us now progress to consideration of the various types of drugs. Drugs may be divided into 3 broad major classifications, dependent upon their characteristics and behaviour:

I: Drugs that function as a result of their general destructive reaction to all cellular structures, including micro-organisms. These drugs are non-selective in action.

II: Drugs that function by virtue of a selective affinity for specific bacteria. These are selective in action.

III: Drugs that produce specific effects, by virtue of their selective action on certain organs or other parts of the body. These too may be considered selective in action.

The drugs of the first group destroy bacteria only because of their inherent destructive reaction to all cellular tissue they encounter, as a result of their caustic or escharotic nature, or by chemical reaction resulting in coagulation. Most of these behave as gross protoplasmic poisons, and destroy the metabolic and catabolic cellular mechanism. The antiseptics, germicides, astringents, escharotics and caustics are all in this category. When these chemicals or drugs destroy the bacteria causing infection, by direct contact, they will also destroy all the tissue cells they contact in the area as well, and produce a surface sloughing of desquamated cells, or even a necrosis. Should the latter be the result, there is great possibility of secondary infection developing in the necrotic tissue, of far graver consequence than the original condition. This type of drug will wreak particular havoc with frail new tissue cells developing in granulation tissue.

Chemical injuries to oral mucosa are not at all uncommon. Direct injury to the oral mucosa frequently follows the prolonged use of astringents. Germicides are harmful if used constantly even in dilute concentrations, or in single applications of concentrated solutions. Idiocyncrasies to drugs may also produce severe oral lesions.[3]

To review some of the more commonly encountered specific oral lesions caused by chemical injury, and their clinical manifestations, seems relevant here.

Chemical Burns: Produced by chemicals that cause burns of the oral mucosa, resulting in blistering or necrosis. The blisters break, leaving wrinkled, partly desquamated epithelium over the area, making the area particularly susceptible to infection. Classic examples of this type of injury are the wrinkled appearance, blanching and ultimate sloughing of the oral mucosa following topical application of a concentrated or stale solution of Tr. Iodine, or when an aspirin tablet is placed on the mucosa at the site of an aching tooth. Becks[8] has illustrations showing severe cauterization of the tongue, following the use of concentrated solutions of sodium perborate in the treatment of Vincents Stomatitis. Volatile oils used for flavor or aroma may also injure the oral mucosa.

Contact Allergy: Sensitized individuals may develop oral lesions following the use of drugs or toilet articles locally in the mouth, or from foods, that will have no injurious effects on normal people. This contact allergy differs from the chemical burns, and from

Drug Allergies: This is an allergic sensitization to the systemic intake of drugs such as the sulfonamides, which may be the factor causing resultant oral lesions.

Drug Stomatitis: This condition, produced through the use of drugs for treatment of systemic disorders over long periods of time, is frequently encountered. Dilantin Sodium, Bismuth, Mercury and the Arsenicals are the most frequent offenders. Dilantin in particular, produces classic symptoms of tremendous hypertrophy of the gingival mucosa, to an extent where the gingival tissues may completely cover the teeth, with accompanying hyperemia, and a tendency to bleed freely at the slightest injury.

Stomatitis Venanata: May result from the use of medicated mouthwashes, lozenges, tooth pastes, or essential oils such as oil of anise. In this form of stomatitis, the marginal gingiva is especially affected. The gingiva is swollen, red, and excoriated, especially in the interdental papillae. The teeth may feel sore, with considerable pain felt when chewing food. Other parts of the oral mucosa, as well as the tongue, may be involved. Vincents infection may set in, causing an ulcerative stomatitis. Secondary allergic reactions may also be produced, especially on the skin of the face and body. This latter condition is known as an Erythema Medicamentosa.

Trophic Ulcers: In this condition the tissue at the site of injection of local anesthetics breaks down and ulcerates. Believed due to use of escharotic agents added to anesthetic solutions.

Lingua Villosa—Hairy Tongue: Non-pathologic, this condition is nevertheless distressing. It is believed to result from chemical irritation in medicines, and mouthwashes, especially from strong concentrated solutions of the oxidizing agents. Hirschfield[3] in 1934 reported that most of the cases he had seen resulted from the use of sodium perborate incidental to treatment of Vincents Stomatitis.

It is noteworthy that most of the oral drug lesions are produced by drugs that belong in Group I.

Group II. The outstanding drugs in this group are the sulfonamides and antibiotics. Extensive review of the complete pharmacology and pharmaco-dynamics of these drugs will not be attempted in this paper. A brief resume of their broad modus operandii may, however, be useful here, to fully evaluate their thereputic potentialities.

Both the sulfonamides and the antibiotics act as bacteriostats rather than as bacteriocides. They apparently do not directly destroy the sensitive micro-organisms, but help to conquer them by inhibiting their reproductive processes. These drugs act chiefly against certain selective micro-organisms; for example, the penicillin salts act chiefly against selected Gram Positive organisms. In vitro, penicillin affects a few of the

Gram Negative cocci, and none of the Gram Negative bacilli.[4] In vivo, they are considered effective primarily against Gram Positive pathogens, although the few Gram Negative cocci that are sensitive to them are extremely important. The life span of micro-organisms is very brief. Complete inhibition of their reproduction makes it possible for the defense mechanism of the body to conquer the invading pathogens in a matter of hours.

Some of the pathogens, (notably the gonococcus) are believed to have the ability to hibernate, especially if the organism is not completely sensitive to the particular sulfonamide or antibiotic used. It appears that during hibernation, even drugs to which the organisms are extremely sensitive seem to lose their effectiveness against the hibernating pathogens, and fail to inhibit their reproductive powers when the period of hibernation is eventually terminated. It is therefore sometimes difficult to determine whether or not a complete cure has been effected, or whether the symptoms have merely been masked. An accurate evaluation of the proper drug to use, based upon thorough diagnosis, helps to avoid pseudo-cures.

When all the organisms normally sensitive to a drug are not completely inhibited in their reproduction, either due to insufficient dosage, or due to the inability of the drug to reach all the micro-organisms when administered locally, those pathogens that do survive the inhibiting action and do reproduce, develop a strain that is highly resistant to the inhibiting effects of the drug used, and become what is termed "sulpha or penicillan fast," as the case may be.[4] When systemic therapy of adequate dosage is ultimately instituted, even massive doses have little therepeutic value if such resistance has been developed in the invading pathogen by inadequate dosage.

Effective dosage with penicillin requires maintenance of a high blood level of the drug until the infection is conquered. A high blood level is most readily obtained by systemic therapy. Absorption is very rapid. Examination has demonstrated that three hours after administration in aqueous solution, no trace is left in the blood stream. To maintain a continuous high level, it either has to be administered around the clock at three hour intervals, or it may be administered in suspension in a mixture of peanut oil and beeswax (Romansky Formula).[5] The suspension in oil and wax prevents rapid absorption, and an adequate blood level is maintained for 12 to 24 hours. The beeswax causes discomfort and even pain, and research to eliminate the necessity for it has resulted in the development of Procaine Penicillin G, suspended in peanut or other oils, as a possible successor to the Romansky Formula. Because penicillin has not manifested any appreciable toxicity, the administration of massive doses, ranging up to 500,000 units per dose, in aqueous solution, has recently been advocated by some.

Micro-organisms that are sensitive to sulfonamides may survive if one of the drugs is used, but be completely inhibited if another of the group is administered in its stead. Sometimes a strain of bacteria that had been conquered by one of the sulfonamides may prove resistant to administration of the same drug a second time, but succumb to another of the group. Occasionally pathogens that apparently are not completely inhibited by administration of either a sulfonamide or penicillin alone, may succumb and be completely inhibited when both drugs are administered simultaneously; the sulfonamide usually being used as an adjuvant to the penicillin.[6,7]

The sulfonamides are not effective in the presence of pus, serum or other tissue products, and when used in closed cavities, due to their relative insolubility, may produce irritation as foreign bodies, without much bacteriostatic value. Penicillin, however, maintains its effectiveness in the presence of pus, serum and other tissue products, and is effective when used in closed cavities, such as the maxillary sinus.[8]

The toxic effects of the sulfonamides

is well known. Penicillin has no comparable toxicity; in about 5% of cases, used intramuscularly, some toxicity (non-fatal) is manifested. Small dosage is ineffective clinically, with both the sulfonamides and penicillin, and favors the development of drug fastness. Furthermore, the patient may become sensitized, in some unknown manner, so that an intolerance for the drug is acquired. Subsequent administration of the drug may produce toxic manifestations, such as drug fever, acute dermatoses and edema, and may necessitate the immediate termination of the therapy. Arthralgia and herpetic lesions of the lips may also develop as a result.

Let us now consider how the various drugs are used. Drugs may be administered in any of the following ways—by:

A: Local Administration
B: Systemic Administration.
C: Combined Local and Systemic Administration.

A: Local Administration may be by:
1: Topical Application
2: Insertion Into the Local Oral Structures.
3: Combined Application and Insertion.

A1: *Topical Application:* The drugs administered in this manner may be either selective or non-selective in action. A few of the more commonly used drugs in this group are:

Tr. Iodine, Phenol, Silver Nitrate, Chromic Acid, Trichloracetic Acid, Tr. Benzoin — non-selective

Gentian Violet, Acriviolet, Adrenalin, Thrombo-plastin — selective

The behaviour of the non-selective drugs has already been discussed. Because of their inherent properties, they are difficult to control and to limit in their action. They may therefore prove dangerous to use except in very dilute concentrations. For conditions that would require use of strong concentrations of caustics or escharotics, it would seem much safer and more efficient to use the electro-cautery, which can be completely controlled and limited in its action.

The aniline dyes, being tissue stains, deeply stain the cellular structures they come in contact with. This staining action appears to be completely harmless to the tissue cells,[9,10] but is apparently fatal to many of the micro-organisms indigenous to the oral cavity, notably those pathogens responsible for Vincents Stomatitis. The dye appears to have a bacteriostatic action on many of the Gram Positive organisms, and inhibits their growth.[9] Because of this fatal affinity for many of the pathogenic organisms found in the oral cavity, with no injurious effects on the tissue cells of the oral mucosa, these dyes are selective in action. The hemostats usually affect either the blood components or the blood vessel walls exclusively, and thus act selectively.

A2: *Insertion into the Oral Structures:* The drugs that fit into this category may also be either selective or non-selective in action. Certain of the non-selective drugs in this group do however, act as physiological stimulants or irritants, and are therefore comparatively safe to use. Drugs that are neither physiological nor selective in action should be used with great discretion if at all. Many of these drugs are used in combination, or as pastes and mixtures, to be applied to gauze, and inserted into the oral structures as dressings.

A few of these drugs more commonly used are:

Aspirin, Phenol, Eugenol — combination

Bismuth Subnitrate, Iodoform, Petrolatum — paste

Balsam Peru, Castor Oil — mixture

A few of the prominent drugs of selective action are:

The Sulfonamides
Penicillin
Tyrothricin
Fibrin Foam
Oxy-Cellulose
Gelatin

The sulfonamides most commonly used in dentistry are sulfanilamide, sulfathiazole and sulfadiazene. Although sulfanilamide is somewhat more soluble than the other two, its toxicity is greater, and it has largely been replaced by the others. The sulfonamides are usually introduced into the oral structures either in powder form, or in prepared compressed cones. They are relatively insoluble in either form. The cones may react as foreign bodies. When introduced into a tooth socket in powder form, they remain relatively undissolved when mixed with the blood, and have frequently been observed to form hard concretions that line the sockets, and thus prevent the normal blood supply from entering the sockets through the minute foramina in the investing alveolar bone. This interference with the nourishment to the blood clot may result in a breakdown of the repair mechanism, with resultant decomposition of the blood clot. Attempts to introduce penicillin crystals into tooth sockets proved unsatisfactory because of the rapid rate of absorption, and because it caused considerable irritation of the local tissues. In compressed cones, to slow down the rate of absorption, the cones have been noted to remain for a considerable time, and may also act as a foreign body. The author has used clear gelatin for the past five years with excellent results, both as a vehicle for introduction of sulfa powder and penicillin crystals into the alveolar sockets postoperatively, and also to fill in large bone cavities such as are present after the enucleation of cysts. The powdered gelatin forms a spongy mass when moistened by the blood, and keeps the drugs in suspension so that they cannot deposit and form concretions, and permits the drugs to be absorbed slowly without irritation. This gelatin sponge also helps to maintain the normal contours, and seems to stimulate the formation of osteoblasts in a manner similar to that following the use of diced fresh cartilage, or bone chips, in bone cavities. The investigations of Sinclair[11] have indicated that gelatin has an organic and physiological similarily to collagen. The gelatin appears to become incorporated into, and remain as an integral part of the blood clot, without in any way acting as a foreign body, or interfering with the mechanism of repair.

Another bacteriostatic agent is tyrothricin. The active ingredients of this drug are gramicidin and tyrocidin obtained from the Dubos spore forming soil bacillus, also known as Bacillus Brevis.[12] It is more limited in its usefulness than penicillin and the sulfonamides, because it can be administered only locally, by direct contact with the pathogens. It is highly effective against selective Gram Positive pathogens, in local infections such as osteomyelitis. The active ingredients appear to function by an inhibiting enzymatic action, by retarding growth, and by lysis of the bacterial cells. It is used most effectively as an irrigant, or in wet dressings, in solutions of 2—2.5% concentration. Administered orally it is ineffective, and is dangerous to introduce into the blood stream by injection.

Streptomycin is the newest of the antibiotics in clinical use. It is valuable in treatment of mixed infections where Gram Negative pathogens are present. It has a selective affinity for most Gram Negative pathogens, and apparently a few important Gram Positives. It has proven very effective in treatment of anthrax, Ludwig's angina, and gangrenous stomatitis. It has also given evidence of effectiveness in treatment of tuberculous infections and actinomycosis. It is best administered by intramuscular injection. Due to its toxicity, dosage is rigid; its usefulness is also limited by the fact that certain strains of pathogens appear to develop a resistance to its action despite adequate dosage.[13] Its effects appear to overlap that of penicillin, and it can be used effectively, administered jointly with penicillin, in mixed infections.

Water soluble derivatives of chlorophyll have been used with beneficial results in treatment of pyogenic wounds and infections with fistulous tracts. The aqueous solutions have proven much more effective than solutions in jellies and oint-

ments.[14] Thoma and his associates reported splendid results following its use in two cases of gas forming cellulitis, as an irrigant in aqueous solution, when penicillin and streptomycin had failed to effect a complete cure.[15] The drug appears to be non-toxic. It has no known bacteriacidal effect, but rather appears to exercise a direct biological stimulating action, plus some bacteriostatic action on living tissues, with no evidence of specific selectivity for any pathogens.

In the preparation of blood plasma, several bi-products of human blood fractation have been discovered. The bi-product that appears to have the greatest value for the dental profession is Fibrin Foam.[16] Its usefulness stems from the fact that the blood clot is derived from the reaction of thrombin upon fibrinogen to form fibrin. Hemorrhage usually occurs because of an insufficiency of one or more of these ingredients in the bloodstream. When bleeding occurs, the addition of the missing substances locally helps to form the desired clot, and thus stops the hemorrhage. The fibrin foam is produced by whipping fibrinogen into a foam, clotting with thrombin, sterilizing and drying. It is packaged in a vial containing 0.7 gm fibrin foam, plus two vials, one containing 500 units of dried thrombin, and the other, 300 cc. of normal saline solution. When it is to be used, the dried thrombin is dissolved in the saline, then a piece of dry foam of suitable size is cut off from the cake and soaked in the thrombin solution for about 3 minutes, until it is thoroughly wet. After excess moisture is removed from the area, it is applied to, or packed into the bleeding area, and may be sutured into position.[16]

Oxidized Cellulose is a self-absorbing synthetic product that may be applied to a bleeding area in a similar manner as fibrin foam, and for the same purpose. It also appears to abet the formation of a firm blood clot when applied to, or introduced into a bleeding area. Both these drugs appear to become incorporated into the blood clot, and neither one acts as a foreign body in the clot.

The use of gelatin has been mentioned earlier in this paper. Gelatin is now prepared commercially in sponge form called Gelfoam, for introduction into bone cavities, as already described. The gelatin is liquified and prepared in a sponge form, and segments are cut and packed into the cavity. It is used effectively with thrombin, and in this combination, is also a valuable aid to the formation of a blood clot. It thus performs a dual role, to stimulate osteogenesis, maintain contour and control hemorrhage.

B: Systemic Administration: When through primary infection, or through mechanical, chemical, thermal or electrical irritation of a non-physiological nature, tissue cells are destroyed and secondary infection sets in, the infecting agent interferes with and causes a breakdown of the normal processes of repair, and must therefore be quickly eliminated, in order to give this repair mechanism an opportunity to resume functioning. Rational yet sound scientific consideration will indicate that the local and topical use of drugs, carefully controlled, might meet with some degree of success in combating surface or superficial infections, but that in those cases where the infection is deep-seated, systemic therapy is indicated. Local treatment may, in many of these cases, enhance the results obtained, if used as an adjuvant to the systemic therapy. In cases of deep-seated infection, the dependence upon local or topical treatment alone, however, is most often not only ineffectual, and contra-indicated, but may often prove to actually be a deterrent toward effecting an expeditious cure.

In a recently published book, Fish[17] has asserted that the necrotic contents of an apical abscess are usually confined by a pyogenic membrane; that in chronic streptococcal infections, the organisms are always confined to a necrotic nidus, and never found free in the surrounding living bone or soft tissues.

Even if we were to completely exclude from consideration the theory of focal infection, that the bacteria at a site of infection may be picked up by the blood stream and carried to other parts of the body, unless a biopsy examination of the surrounding tissue were performed in every case to determine whether or not any pathogens had invaded beyond the pyogenic membrane, such reports should not be construed as justification for use of the antibiotics by local administration exclusively, in treatment of such infections.

Even if all the bacteria remain confined within a necrotic nidus, the preferable therepeutic procedure, to avoid the possibility of inadequate dosage, is to administer the drug both systemically and locally. In this manner, the blood will carry the drug to the necrotic nidus, and inhibit any pathogens that may have been carried beyond it, and the local use will bring a concentration of the drug to the immediate area of infection, so that a maximum result can be obtained in the shortest period of time.

At no time is there justification for the administration of the antibiotics as a "shotgun remedy," nor is there any justification for inadequate dosage in the form of lozenges, troches or tablets, for the treatment of "mild" infections. Many of the so-called cures reported, following use of the drugs in this fashion, have ultimately proven to be no real cures at all, and often have only succeeded in unnecessarily sensitizing the patient against future use of the same drug. The beneficial results noted following the use of penicillin troches and lozenges for mild superficial infections and ulcerations can very frequently be duplicated by chewing of parafin or chewing gum, with the resultant mechanical friction and stimulated flow of saliva to bathe the affected area.

Had any doubts previously existed as to the efficacy of systemic therapy in the treatment of oral diseases and lesions, the dramatic results obtained by investigators, such as those obtained by Dr. Bartelstone[18] and his associates in experiments with radioactivated isotopes, provide conclusive evidence that drugs administered systemically are readily carried, not only to the oral structures and tissues, but to the teeth as well. Radioactivated iodine was injected intra-peritoneally in cats, and ten to twelve hours later the animals were destroyed, the teeth extracted and sectioned. These sections were then mounted on x-ray film in the dark room for specified periods of time, and autographies obtained, producing well-defined images of the teeth on the film, by virtue of their radioactivity. It was thereby established that the radio-activated iodine injected intra-peritoneally had been carried by the blood stream to the teeth and their investing structures. This experiment affords specific evidence that systemic therapy is carried by the blood stream to the oral tissues and structures.

Let us now consider the systemic administration of drugs. Drugs may be administered systemically in the following ways:

I: Oral Administration.
II: Parenteral Administration.
III: Inhalation.

I: Oral Administration may be obtained by:
- a: Ingestion.
- b: Absorption (within the oral cavity).

Ia: INGESTION.

Among the more commonly used drugs in this group are:

Phenacetin	Hypnotics
Aspirin	Narcotics
Vitamin K	Tonics
Ascorbic Acid	Penicillin Tablets
Calcium Comp'ds	Amino Acids
Sulfonamides	Vitamins

Ib: ABSORPTION.

Among the drugs used in this fashion are:

Nitroglycerin Atropine Pilocarpine

Absorption within the oral cavity is usually obtained by placing the drug under the tongue.

All the above mentioned drugs have one feature in common. They may all be considered to be selective in action, since those that have no effect on pathogens, have specific effects on selective organs or other parts of the body.

It has recently been established that aspirin and phenacetin, commonly administered or prescribed for their analgesic effects, interfere with the efficient formation of blood clots by producing a hypothrombineria,[2] which may result in postoperative hemorrhage, or result in a frail blood clot, that may readily disintegrate and decompose, and thus predispose to the formation of a dry socket. To overcome the tendency to produce hypothrombineria, it is advisable to administer Vitamin K, or Menadione, a synthetic Vitamin K, to counteract the effects of the salicylates, and restore a normal blood balance. This represents another reason why it is advisable to avoid the introduction of aspirin, phenol and eugenol into painful sockets. In such cases, removal of the decomposed blood clot, that is largely responsible for the pain, followed by irrigation with isotonic saline solution to surgically and mechanically cleanse the socket, and stimulate the flow of blood to form a new blood clot, and thus reinstitute the normal mechanism of repair, would appear to be the proper procedure.

II: PARENTERAL ADMINISTRATION of drugs may be by:

a: Intravenous Injection
b: Intramuscular Injection
c: Subcutaneous Injection
d: Neural Injection

IIa: INTRAVENOUS INJECTION:

The drugs most commonly administered in this fashion are:

Penicillin	Narcotics
Caffeine Citrate	Pentathal Sodium
Coramine	Glucose

While these drugs may at times be administered in this fashion in dental practice, with the exception of pentathal sodium, this form of administration is used primarily in emergencies, such as cardiac and respiratory failure, or infrequently for pre-medication.

IIb: INTRAMUSCULAR INJECTION:

If we are to include local anesthetics administered as regional or block anesthetics in this group, most of the drugs used by injection in dental practice are administered intramuscularly. Notable among them are:

Penicillin	Codeine
Caffeine Citrate	Adrenalin
Coramine	Thromboplastin
Morphine	Local Anesthetics

IIc: SUBCUTANEOUS INJECTION:

In dentistry, the only drugs that might be considered to be administered subcutaneously to any extent are the local anesthetics, when used by submucous infiltration, or when used to raise a weal prior to extra-oral injection.

IId: NEURAL INJECTION:

The neural injection in dentistry is limited to the injection of alcohol into the sensory branch of the Gasserian Ganglion, at the Foramen Ovale, to produce prolonged paresthesia for the relief of pain in Trifacial Neuralgia.

III. INHALATION:

Drugs administered via inhalation in dentistry include:

Inhalation General Anesthetics	Amyl Nitrate
	Trichlorethylene
Aromatic Spirits of Ammonia	

All the drugs mentioned in groups II and III may be considered to act selectively, either on specific pathogens, or because they produce selective results by affecting specific organs or other component parts of the body.

C: Combined Local and Systemic Administration has been covered in the preceding paragraphs and needs no further elaboration.

Iodochloral and lipiodol are two drugs that have not been included in any of the above classifications because their primary value is as diagnostic aids; they merit

mention because they can be of great help to arrive at a thorough diagnosis, and thus lead to prompt institution of adequate treatment. Both are radiopaque oily iodine-base liquids. They are used by flooding into fistulous tracts, or into the ducts of the salivary glands, to produce sialograms. A blunt, round-ended needle (hypodermic—16 to 20 gauge) is inserted into the orifice, and the fluid injected into the tract without penetrating into the surrounding tissues, or any injury or irritation to the adjacent tissues, to produce well-defined x-ray visualization. Some claims have been advanced that these drugs have antiseptic qualities, and help to overcome infection, and stimulate healing in the tracts, but their principal value is their diagnostic aid by virtue of radiopacity.

Earlier in this paper, it was mentioned that medicated mouthwashes may cause damage to the oral mucosa as a result of irritation, and thus may interfere with the effectiveness of the normal mechanism of repair of tissue. In cases where lavage of the oral cavity is indicated, normal or isotonic saline solution, at body temperature, used with light pressure in the spray bottle, or irrigating syringe, or as a postoperative mouth rinse, is an ideal agent. The saline solutions have approximately the same physiological factors and pH as the blood and lymph fluids, and if prepared with distilled water, can also safely be used to cleanse and debride the operative field. They act, not only as mechanical cleansing agents, but also as stimulants to the repair mechanism, stimulating the tissue cells, without injury to the frail, newly formed cellular structures of granulation tissue.

Comparatively few of the many drugs used in dentistry have been reviewed or even mentioned in this paper. A host of other drugs are frequently used in the dental office. The same principles of classification, by evaluation of characteristics, behavior and effects on the mechanism of repair of tissue can be profitably applied to any drug that is used. It is largely through such full evaluation that selection for maximum effectiveness of any drug can best be determined.

Before closing, there is one final observation of importance. When dealing with deep infection, with pus confined within the tissue spaces or fascial planes, or within bone cavities, the administration of drugs only, regardless of their effectiveness, will not effect a complete cure. There are three cardinal principles that must be observed in such cases, namely; sterilization, evacution and obliteration. The drugs may sterilize the infection, but evacution by means of adequate drainage must first be instituted before obliteration of the cavity by regeneration of tissue can result.

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RELAXATION OF EXCITABLE PATIENTS WITH HYPNOSIS*

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It is the opinion of many investigators today that the average intelligent individual—the businessman, the dentist, the physician, sometimes even the psychiatrist—has little definite knowledge of hypnotism. Universities do not teach it. Many of you here this evening may expect to be entertained, perhaps with a feeling of awe. However, when you understand the various psychological theories, even though conflicting, the ideas of the supernatural will disappear as well as any weird and fearful concepts that you may have had.

It is generally known that hypnotism is accepted medical therapy today. It is not to be confused with Mesmerism—the earliest trend in psychological medical therapy. The thought behind Anton Mesmer's quackery was that there was a flow of magnetic fluid from the healer to the patient. We do not believe he was sincere in this since he effected the removal of many symptoms. However, he put on a "show" with all the trimmings, making it black with mysticism, so that even today people fear being "mesmerized." As early as 1841, James Braid, a Scotch physician, who could not accept Mesmer's theories, not only coined the term "Hypnotism" from the Greek "hypnos" meaning sleep, but also devised the first method of using a light to induce hypnosis. Elliotson, another physician of that era, was the first to use hypnotism effectively in treating hysteria. He was also one of the first to use a stethoscope. About 1889, Bernheim[1] gave definite techniques of inducing hypnosis. These are used today with some variance of procedure, particularly the elimination of commands, with the avoidance of intimidation and with more calmness on the part of the hypnotist. Braid and Bernheim both contended that hypnosis was merely suggestion, nothing else. Bernheim believed, and rightly so, that it could be produced in normal individuals. Then Charcot, who was Freud's teacher, became interested in hypnosis, and since his work was with hysterics primarily, he concluded that the phenomena was pathologic and could only be produced in hysterical individuals. His theories were incorrect, and finally Bernheim's theory took precedence. However, because of the general ignorance and misconception, skepticism and doubtfulness became more the rule than the exception.

Most observers are of the opinion that hypnosis produces a state of hyper-suggestibility in the individual. Yet, there are others like Brown[2,3] who found that in the very deep stages of hypnosis there was a great decrease in suggestibility, and with a light hypnosis, a greater degree in some people. Here you have one indication of the conflicting opinions in the theory of hypnosis. To our mind, this is a healthy sign, and we are apt to gain much in a therapeutic way from all theories when using hypnosis on dental patients.

Kubie and Margolin[4] feel that the human eye has replaced the nose and head of lower forms of animals as the exploratory and investigatory organ. When an individual is hypnotized the subject immobilizes himself, at the same time reducing the visual spot to respond to a low monotone. By the hypnotist persisting in a monotonous voice that the patient sleep, the motor and sensory responses are limited so that only the voice of the hypnotist receives a response from the brain.

According to White[5] the hypnotic state is viewed as a directed striving—the subject having for his goal to act like a hypnotized individual and to fulfill the directions of the hypnotist. This limitation permits the subject to think with greater intensification. According to Brenman and Gill,[3] this is the trend of

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thought in hypnosis today. The differences of opinion go one step further in that some believe that there is a definite relationship between hypnosis and sleep and others like Wells,[3,6] induce hypnosis in a waking state. This is so done that the observer is unaware of the fact that the subject is under hypnosis. Waking hypnosis is differentiated from "Sleep Hypnosis" in that no mention of the word sleep or hypnosis is made during the induction or after. This would seem to be direct suggestion. Yet, to some, the terminology may be confusing for if hypnosis is not akin to sleep, another term other than "waking hypnosis" should be found. One must remember that Braid coined the word "Hypnosis" from the Greek "hypnos" meaning sleep. Bass[7] found that the knee jerk (patellar reflex) which cannot be obtained during sleep is very obvious during the waking state and during hypnosis. For this and other reasons, investigators today feel that there is no relationship between hypnosis and sleep.

Yet, according to Le Cron and Bordeau,[8] practically all theories including that of White are unacceptable. They believe that there is no definite theory of hypnosis and that hypnotism is the control of thought and action through suggestion. They also refute the theories of Bernheim that hypnosis is a form of sleep since consciousness is not present in natural sleep. They find that the theories of Charcot and Brown,[2] that anyone hypnotizable is a hysteric, are wrong since "normal people make good subjects and some hysterics cannot be hypnotized." McDougal refuted Ferenczis theories that the relationship of the subject to the hypnotist was an Oedipus Complex—a child-parent relationship, since a good subject can be hypnotized by any sex. Pavlov's theory[9] of hypnosis being a conditioned reflex is also refuted by Le Cron and Bordeau. Salter's[10] ideas on this same subject are opposed by Brenman and Gill. We know that the first attempt at hypnosis in some individuals works immediately without having been previously conditioned. White's[5] theory that hypnosis is a "goal directed striving" is also denied since young children who never have heard of hypnotism cannot have for their goal to act as they feel a hypnotized individual should act.

One is therefore, led to believe that there are many interrelated and diversified thoughts on this subject, mostly controversial. Perhaps, as in other fields of medicine, more research by psychologists will bring out a theory acceptable to all.

It is interesting to note the methods used today for induction of hypnosis as compared with the persistent and demanding commands given by Bernheim.[1] S. H. Krains[11] presents a very calm, quiet method of hypnotizing patients. This procedure can be followed in one's own words, depending upon one's temperament, insight and ability to take advantage of the correct psychological moments. The correct phrasing of suggestions is very important, not only in hypnotherapy but also in induction of new subjects. Krains describes his procedures as follows in his book "The Therapy of the Neurosis and Psychoses":

> "I want you to relax. Relax every part of your body. Now, when I pick up your hand, I want it to fall as a piece of wood without any help from you. (The examiner then picks up the hand and lets it fall to the couch). No, you helped raise the hand that time; just let it so relax that you have no power over it. (The test is repeated as often as it is necessary for the patient to leave it drop). That's the way. Now relax your legs the same way; just let them be limp. Now take a deep breath and let it out slowly. Now concentrate on your toes. A warm sensation starts in the toes and sweeps up your legs, abdomen and chest and into your neck. Now relax your jaws. Relax them more—still more. Now your cheeks, now your eyes. Your eyes are getting heavier and heavier. You can hardly keep them open. Soon they will close. Now smoothen out the wrinkles in your forehead. Good, now make your mind a blank. Allow no thoughts to

enter. Just blank. You see a blackness spreading over you. Now sleep, sleep. Sleep. Sleep. Your entire mind and body are relaxed—sleep, sleep. (This phrase is repeated several times in a soft persuasive voice). Your sleep is becoming deeper, still deeper. You are in a deep, deep sleep." End quote.

Note how calm and relaxing the induction is—yet how definite—yet soft and persuasive. The constant repetition finally narrows the mind to one thought and that is the voice of the hypnotist and his directions.

Most psychologists feel that a light or an object placed in front or above the eyes is unnecessary. Merely closing the eyes is sufficient. However, in the dental office, the unit light is so handy and patients respond to it so amiably and quickly that we can see no reason why we should not use it at least during the first induction. Afterwards, post-hypnotic suggestion may be given so that at any future time one will be able to relax the subject by merely counting to ten, or by placing one's hand on the subject's shoulder. Any sign may be used.

There are a number of pertinent thoughts that we find are helpful in presenting this type of relaxation to the patient. First: we do not tell the patient that we are using hypnosis when he is put under for the first time—or at any other time if we can help it. We do tell them that we are relaxing them and that they will feel drowsy and pleasant. Secondly: It is inadvisable to give the patient any suggestions that may embarrass him in any way. Thirdly: When reasonably sure that the patient is under, it is advisable to give the individual a test to convince him that he is under hypnosis. It is possible that an intractable patient may be under and is asked to close his fist tightly and that he may try but that he cannot open his fist. If you note that this patient has not followed previous directions in induction and is about to open his hand, it is wise to use insight here and make the suggestion immediately that he open his hand. Say this while he is in the act of opening. This is confusing to the individual. He does not know whether he opened his hand of his own volition or if he followed your direction. This gives the hypnotist an opportunity to continue induction again and this time to give other tests. Have the patient interlock his fingers in front of him with arms outstretched—and to squeeze tightly. Then tell him to try but that he cannot open his fingers. This usually works. Follow this up by suggesting as a test that his eyes are closed tightly and that he cannot open them. All these illustrate Coue's[12] Law of Reverse Effect. The more you try to fight a suggestion under hypnosis, the harder it is to accomplish. This convinces the patient of the phenomenon and after that, further and deeper induction becomes easier.

An over-active cooperation has a negative effect, since a passivity of mind is essential. If the subject is too cooperative and over-anxious to become hypnotized, Coue's law goes into effect again and the results are poor since a passive attitude on the part of the subject is necessary. Negative suggestion should be avoided since a positive suggestion has a greater effect. In other words, in order to obtain good results, the hypnotist should know how to phrase his suggestions properly. They should be clear, precise and logical. Not only should they be understood by the subject but they should be acceptable. It is for that reason that we, as anesthetists who use hypnotism as one of our adjuncts, should handle our phraseology with insight and understanding comparable to our knowledge in operating a nitrous oxide machine in the office.

Having used gas oxygen for many years, we have found that during analgesia there are times when the patient may wince a bit. This was undoubtedly due to pain. When giving a general anesthetic in surgery, one may find a similar condition. It has been the custom of anesthetists to give a deeper anesthesia in a general anesthetic at these times and during analgesia to give a fleeting general anesthetic. This brings the patient into

amnesia as far as pain sensation is concerned and he forgets the pain. This is akin to natural sleep and dreams. Most of our dreams are forgotten when we awake because of the amnesia that we get when we pass from the subconscious state in sleep to the conscious state upon awakening. Keeping this in mind, before getting the subject out of the hypnotic state, I find that it is advisable to state that the individual will be in the amnesic state after two deep breaths or at the count of five. He will forget any pain sensations he may have had and that upon awakening he will find that he has experienced a pleasurable visit and that he is completely rested. Since suggesting amnesia to pain sensations our subjects very seldom complain of pain. According to Magda B. Arnold,[13] anesthesias of different degrees may be produced—according to the instructions given and according to the way patients visualize them. Miss Arnold states, for example, that if a subject is told that his arm will be free from pain when being pinched, he may still feel the presure of the touch and may interpret that touch as pain. He should be told that his arm will be completely insensitive to pressure from touch or pain. This explains why hypnosis used on excitable dental patients or those who have extreme pain are not concerned with whether or not they can be hypnotized. They follow directions automatically and are quite passive about the whole situation. They relax easily.

At the end of each dental visit, before taking the patient out of hypnosis, besides suggesting amnesia to pain sensations, posthypnotic suggestions is given that the patient will reach the depth of hypnosis of the previous visit and will continue to a further depth of hypnosis.[13] However, we are not convinced that for our purpose of relaxation or anesthesia that this is necessary. We believe that a light hypnosis gives us a better result in anesthesia in most patients.

According to Le Cron and Bordeaux, children are almost 100% hypnotizable.[8] Bramwell[14] feels that 78 to 97 per cent of the entire population are hypnotizable *to some degree.* For simple relaxation, this small degree is all that is necessary in dentistry, and for this we advocate the routine use of hypnosis in excitable cases. Any cooperative individaul can be hypnotized almost immediately. We are not talking about the deep somnambulistic state, since we do not advocate the total use of hypnosis against the use of any other anesthetic. We have known dental surgeons to induce anesthesia with sodium pentothal and follow up with a mandibular injection. Here you have the use of two anesthetics. When the surgeon reassures his patient that he will be completely relaxed and he will go to sleep and everything will be all right, he is really using hypnosis inadvertently with his other anesthetic.

As for drug hypnosis, this is helpful as an aid in inducing hypnosis in intractable cases. We remember one incident, in which Mr. F. M. had to have six upper anterior teeth removed. We had previously removed other teeth with supra-periosteal injections of 4% Novocain, but this patient undoubtedly felt every extraction. A half hour before extracting the anterior teeth, sodium amytal, grains ½, was given by mouth, hypnosis instituted and Novocaine injected around the six upper anterior teeth. Before each extraction we told the patient he would not mind the pressure and would be free from pain. However, we neglected to mention this before the last two extractions and to this day he claims he felt pain with these last two extractions.

We further suggest that our posthypnotic suggestions be reasonable and related only to our dental practice. We are interested primarily in having a quiet, obedient patient so that we might produce the best possible results in our technical and surgical procedures. As a post-hypnotic suggestion we might state the patient will arrive calm hereafter and that he will remain calm and relaxed in the dental chair. We might also state that he will not be apprehensive and that he will go to sleep at the count of ten or at any other sign suggested. For ex-

ample, one may say, "In the future, when I place my right hand on your right shoulder, you will go to sleep." No absurd post-hypnotic suggestions should be given, for you may find either of two things happening—an immediate awakening of your patient with a questioning expression, or an amnesia to the whole post-hypnotic thought as a defense mechanism.

One hears a great deal about the possible dangers of hypnosis. The danger in its use occurs only in the public exhibition of hypnosis. The stage play is so fast that unless the hypnotist is careful to remove all ridiculous suggestions before the patient is brought back to normal status, psychic trauma may result. For example, a suggestion that a bug is crawling on the subject's back during hypnosis, if not removed, will persist long after the subject is brought out of hypnosis. The acrobatics suggested in parlor tricks may sometimes cause bodily injury. It is for that reason that we feel stage play using hypnotism should be outlawed. If we are to liken this phenomenon to an anesthetic, it would seem foolish to permit the public exhibition of a nitrous oxide or chloroform anesthesia with subsequent surgery on the stage platform. You, as doctors of surgery, can do no harm with hypnosis while using it for relaxation of your excitable patient or in the relief of pain.

There is no connection between hypnotism and the psychic phenomenon called spiritualism. The honest medium is really in a state of self-hypnosis and expounding in one of the dual or multiple subconscious personalities some individuals have, other than their true self. This change of personality, voice and inflection under self-hypnosis gives the observer the feeling that another soul is heard. According to Erikson,[16] bringing out this dual personality in hypnosis may be dangerous for the subject in that it may be a way of getting the individual into schizophrenia. We emphasize the fact that we, as dentists, should be concerned only with the use of hypnosis in the relief of pain and for relaxation.

Hypnotherapy, the treatment of disease with hypnosis, has been practiced for a long time, particularly in functional disease. In 1840, James Esdaile, before the discovery of chloroform, hypnotized his patients for surgery. It is recorded that he performed three hundred major operations, including amputations and removal of tumors without pain to the patients. Today, various specialties of medicine use hypnotism in one form or another. This is commonly know particularly in gynecology and obstetrics. According to Le Cron and Bordeaux,[8] suggestion through hypnosis has been reported to control excessive blood flow during menstruation and to remove some types of menstrual pain. These pains are sometimes due to suggestions and anticipation. In obstetrics, hypnosis is being used before delivery to quiet the patient and to remove the expectancy of pain. Because of the cooperation of patients with the obstetrician, this method has been found to be very gratifying.

Gessler and Hanson[17] both worked on basal metabolism, showing that it could be lowered by hypnosis. Hanson[18] also did research in the field of allergy and bronchial asthma. He showed that the asthmatic attacks were eliminated even though a positive skin reaction was obtained. Other research men have found that some allergies, asthmas, skin reactions, ulcers, colitis, indigestion, etc., are very often due to psychogenic origin. When this is so, and hypno-analysis and hypnotherapy are instituted, many are cured; of course, psychotherapy is of importance to prevent recurrence.

Some allergists have hynotized patients, particularly children, to prevent them from scratching. In the back woods of Canada at Lake Nippissing, in August 1946, we found it necessary to hypnotize a fishing partner, who had been severely bitten by deer flies around the ankles. He scratched so hard for two days and nights that his ankles were badly swollen. Although hypnosis stopped the scratching immediately, he had to be treated by a physician for infection that had developed.

Much work has been done by Povorinsky and Finne[19] in the field of diabetes. They found that the quiescent state of hypnosis in itself tends to lower the blood sugar. In their work, they have suggested to the patient that a glass of plain water was sugar water and a check showed an increase of blood sugar. Conversely, a drink of a glass of sugar water under hypnotic suggestion that it was plain water showed no increase of blood sugar. It is generally agreed that here, the emotions play a great part. However, all psychosomatic symptoms including sea sickness, air sickness, psoriasis, and insomnia, may be treated with direct suggestion. These may be temporary or permanent.

Kraines points out that "it is not only important to suggest that the symptoms clear up but that the basic emotional difficulties be dealt with in a more hygienic manner." He would suggest, in certain cases, the disappearance of attitudes underlying the symptoms.

Psychologists and psychiatrists sometimes use a catharsis method under hypnosis to have a patient relive his pent-up emotional experiences. This is effective, especially in cases of hysterias and war neuroses[20], particularly those with symptoms of paralysis. It is to our advantage to be able to differentiate between the hysterias, the various neuroses, the phobias, the obsessions, compulsions and tics. It should be of interest to have an acquaintance with the psychotherapeutic methods used by medical consulting psychologists. Even though we, as dentists, are not concerned with the therapeutics of these conditions, we should be able to at least know the abnormal from the normal. The field of psychoanalysis is a lifetime study in itself. One of the recent outstanding books published last year on psychoanalysis was Louis R. Wolberg's *"Hypnoanalysis"*[21], with a dynamic interpretation by A. Kardiner. According to Wolberg, "Psychoanalysis has many drawbacks. As a major psychotherapeutic procedure, it is not indicated in all forms of emotional illness." Many visits to the psychiatrist are essential to affect a cure. With so many individuals mentally ill, the long drawn out methods of psychoanalysis are so costly as to make it impossible for the average individual to benefit by it. Therefore, many have looked for a shorter and modified technic. This comparatively new science of hypnotherapy shows great possibilities, even though it does not work in all cases. There are failures in this as in other forms of psychotherapy. Wolberg feels that hypnoanalysis holds promise of becoming a valuable adjunct to psychoanalysis.

From the foregoing it becomes apparent that a hypnotist does not have tremendous powers. He does not and cannot make an individual a dependent slave. Nor can he hypnotize a patient against his will. From my observations, most patients are the better for it. They become fully rested, strong and seem very pleased with this experience—for haven't they been without fear, relaxed and without pain? So many have felt that it is a matter of the will of the hypnotist against the subject. On the contrary, an individual does not have to be weak-willed. The best subjects are usually intelligent, educated and fine people. Only the idiotic, feeble-minded individuals and those who are so deeply psychotic that they do not respond to psychotherapy in any form, cannot be hypnotized.

Our induction of hypnosis in the office is similar to that outlined by Kraines. Like any other medical or dental procedure, we must expect a certain percentage of cases that admit of defeat. However, there are others where we have been able to dispel the fear that countless people have of the dentist. You have all experienced a visit from an apprehensive patient, perhaps flushed or decidedly pale. In some, the carotid area in the visible part of the neck shows strong, rapid pulsations. Others have shortness of breath, tightness around the chest, difficulty in breathing, difficulty in swallowing. The whole gamut of hysteria may unfold itself before you.

This tremendous fear and excitement may produce considerable mental trauma

to the patient. Relaxation is practically instantaneous when the patient is properly placed in a hypnotic state. We are not dealing with hypnoanalysis and so do not have to reach a somnambulistic state. We do find, however, that if here we do not permit the patient to talk our results are better as far as anesthesia and analgesia are concerned. At this time, we would like to cite a few case histories.

Mrs. K. presented herself for an extraction of an upper first molar. The tremendous pressure required to extract this tooth was great enough to throw this patient into shock. We insisted that the patient rest and possibly sleep. Even though Mrs. K. knew she must rest, she wanted to go home to feed her children. We insisted on sleep. Objections ceased and the patient complied with the request. This patient slept two hours. She had been inadvertently hypnotized without my having any formal knowledge of hypnotism at the time.

Twenty-five years ago, Mrs. W. visited a dental office and fainted. She was unconscious for five hours. Unfortunately, the dentist gave her the impression that if she ever returned to the dental office she might die in the chair. This person decided to come to us for dentistry with that thought in mind. The emotional trauma associated with her previous experience was so great that the patient became hysterical. She developed first, a loss of mobility, then accused us of holding her in the chair and not permitting her to arise. Finally, she became abusive. On the next visit, with the aid of hypnosis, everything ran smoothly, normally and relatively simply.

If actions and motions of the patient are done quickly there seems to be a tendency for the patient to come out of the hypnotic state.

In conclusion, there is a wave of law suits today against dentists using hypnosis on their patients. It is best for this reason to have an assistant in attendance. It is also wise to tell the patient only that he will be relaxed. The term hypnosis is never mentioned. We should know our patient and who recommended him to us, so that we can evaluate the type of individual we are working on. One must remember that there are hysterics pure and simple who will seek to blame any and all for monetary reasons. Juries today are sympathetic to one who feels injured. However, in the light of what is known today, ignorance of hypnotism should not be tolerated in our profession. We, as dentists, should know this subject as well as we know our local and general anesthetics. It should be taught in medical and dental schools. Hypnosis is now being used freely in Psychology, Psychiatry and Obstetrics.

Today, it is evident that we, as dentists, are engaged in a specialty of medicine and that we should avail ourselves of all that is accepted medical remedy so long as we can apply it intelligently. We have helped ourselves in surgery to the antibiotics. We are lectured to by psychiatrists who tell that the mouth is a vital sex organ, made so from the moment a child makes sucking motions with its lips in feeding. The mouth plays an important part in behavior characteristics—in psychology. As such, we, as dentists, should have more than a nodding acquaintance with the field of social psychology, particularly in that branch which has to do with hypnosis as an anesthetic. By so doing, we can render a better and finer service to our patients.

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The Semantics of Scientific Method

. . . we have indicated, as we have said, five important features of science as general method and orientation, science as a way of life. In brief summary these are:

1. The basic notion that reality is to be regarded as a process. Process implies continuous change. Continuous change implies a never-ending series of differences in ourselves and in the various aspects of reality to which we must remain adjusted. No two things are exactly alike; no one thing stays the same. The point of view which such a notion represents is the fundamental point of view of science.

2. Adaptability, a readiness to change as changing conditions require, is fostered by such a point of view. Adaptability is a prominent feature of a scientific way of life.

3. Of the four main steps involved in scientific method, three are concerned primarily with the use of language: the asking of the questions that guide our observations, the reporting of the observations in such a way as to answer the questions, and the revising of beliefs to the extent that such revising is required by the answers obtained. (The fourth step, which is not directly concerned with language, is that of making the indicated observations). *The language of science is the better part of the method of science.*

4. The language of science is meaningful, in the sense that it refers directly or indirectly to experience or observable actualities. As meaningful language it is clear and it is designed to be accurate or valid. It is continually directed by two great questions: "What do you mean?" and "How do you know?"

5. The language of science not only involves meaningful, clear, and valid statements, but also centers around clearly answerable questions. The use of language in a scientific way involves a peculiarly important rule: *The terminology of the question determines the terminology of the answer.* There is no place in scientific language, there is no place in the language of sanity, for vague or meaningless—that is to say, unanswerable—questions. Such questions are maladjustive, tragically misdirective of human energy. In a scientific way of life they are ruled out; they are frankly abandoned. As was said at the conclusion of the preceding chapter, the good will and well-being which the patriarch and the moralist so often and so disastrously fail to achieve, the scientist would seek to gain by teaching people how to put to nature and to themselves *only* the kind of questions that *can* be answered with practical clarity.

from "People In Quandaries," by Wendell Johnson, Harper & Brothers, 1946.

Presentation of charter to the New Jersey Section

CORRELATION OF TREATMENTS FOR PERIODONTAL POCKETS

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The periodontal pocket is comparable to certain other products of dental disease such as calculus or dental carious cavities. Their presence aggravates the disease, as calculus does; or their anatomic form presupposes disease even if all diseased tissue is removed, e.g., the cavity, resulting from the complete excavation of carious tooth structure, is readily subject to re-decay unless restored to proper tooth anatomy with a filling. Thus the periodontal pocket or the deep gingval sulcus may act as non-cleansible harbors for bacteria, food and apoxemena which may initiate periodontal disease. On the other hand, a deep gingival sulcus may occasionaly remain healthy if good oral sanitation is practiced and all causitive factors of periodontal disease are eliminoted.

Thus elimination is the treatment of choice for the periodontal pocket although it is not always feasible since it may be as important to retain the gingiva as it is to retain the tooth. Therefore other methods of treatment may be indicated.

Elimination of the pocket does not, however, imply elimination of the gingiva in most cases. Reattachment of new bone to cementum may occur, especially in the intrabony or subalveolar pocket; closure of pockets may also occur by adaptation (attachment?) of epithelium to the cementum. This epithelial attachment and closure of the pocket is sufficiently tight to prevent the insertion of a probe into the former site of the pocket. The role and strength of the intercellular cementing substance which normally binds the epithelial cells to each other and to the underlying connective tissue

* From the Periodontia Department, New York University College of Dentistry.

(and in this instance to cementum) has not been determined. Naturally, an epithelial closure cannot be expected to provide as much support nor to be as durable as a regeneration of bone, cementum and periodontal membrane.

The special treatment provided for the periodontal pocket must never be considered as more than an adjunct to the complete treatment of the periodontal disease syndrome. The differences in periodontal pockets and periodontal patients require more than one method of treatment. Detailed descriptions of techniques are to be found in the works of Miller, Box, Orban, etc. The following chart is offered as a correlation of these methods.

TECHNIQUE OF PERIODONTAL POCKET TREATMENT

Technic	*Tissues Removed*	*Indications*
1. CONSERVATIVE SUBGINGIVAL CURETTAGE	1. Epithelial lining of pocket 2. Concretions 3. Diseased granulomatous tissue 4. Diseased cementum	All accessible pockets
2. CHEMICOCAUTERY	Soft tissue wall of pocket	1. Third molar flaps 2. Pockets involving soft tissue only
3. MECHANICAL METHODS A. Packing B. Massage	Soft tissue wall of pocket	1. Hypertrophic gingivitis 2. Shallow soft tissue pockets 3. Where surgery is contraindicated
4. SURGERY A. Conservative a. Miller buttonhole b. Sorrin semilunar c. Flap d. Kirkland semiflap	1. Epithelial lining of pocket 2. Concretions 3. Diseased granulomatous tissue 4. Diseased cementum	Where it is essential to retain the gingiva but: 1. Pockets are inaccessible to effective subgingival curettage because of shape or large amount of granolomotous tissue 2. Pockets continue to suppurate following conservative treatment
B. Radical a. Ward technic	1. Soft tissue down to bone 2. Affected bone	1. Where conservative subgingival curettage is not feasible or has been ineffective in reducing the pocket to less than 2 mm. depth and esthetics is not a prime consideration 2. Lower first molars with bifurcation involvements where roots are widely spaced and the patient is cooperative on home care 3. Removing gingival collars preparatory to cavity or abutment preparation
b. Black technic	Soft tissue down to base of pocket or bone	
c. Crane-Kaplan operation	Soft tissue to base of pocket	
5. ELECTROSURGERY (Electrocoagulation, Electric Knife and Loop)	Soft tissue	Same as for Radical Surgery but bloodless field is desired

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